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Abstract Title:

**Understanding the Environmental and Climate Impacts of biomass
burning in Northern sub-Saharan Africa**

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ABSTRACT

The northern sub-Saharan African (NSSA) region, bounded on the north and south by the Sahara and the Equator, respectively, and stretching from the West to the East African coastlines, has one of the highest biomass-burning rates per unit land area among all regions of the world. Because of the high concentration and frequency of fires in this region, with the associated abundance of heat release and gaseous and particulate smoke emissions, biomass-burning activity is believed to be one of the drivers of the regional carbon and energy cycles, with serious implications for the water cycle. A new interdisciplinary research effort sponsored by NASA is presently being focused on the NSSA region, to better understand the possible connection between the intense biomass burning observed from satellite year after year across the region and the rapid depletion of the regional water resources, as exemplified by the dramatic drying of Lake Chad. A combination of remote sensing and modeling approaches is being utilized in investigating

multiple regional surface, atmospheric, and water-cycle processes, and inferring possible links between them. In this presentation, we will discuss preliminary results as well as the path toward improved understanding of the interrelationships and feedbacks between the biomass burning and the environmental change dynamics in the NSSA region.